**Topic: Exponential Functions**

**Activity: Every Day for a Month. . .**

*Note: These activities are similar to “the rich mathematician” but are modified for appropriate grade levels. By doing these activities students will have the background experience that will lead to the learning of exponential functions. Lessons are briefly described so teachers can modify/adjust/extend as needed for their classroom.*

7-8 (same as 4-6 with exceptions\*\*):

* Problem--Would you rather get an allowance that pays $1.00 per day or get an allowance that doubles the amount each day until the end of the month? (However you only start with $.01 on the first day)
* Materials--Use money and/or calculators to model. Also set up data table on chart paper.

|  |  |  |
| --- | --- | --- |
| Day | $1 per day | Double $ each day |
| 1 | 1.00 | $.01 |
| 2 | 2.00 | $.02 |
| 3 | 3.00 | $.04 |
| x | x (day) | x day |

* Process—1. Gather student opinions to the problem. Have students set up an empty data table. 2. As students are working go around to discuss patterns in the data table. (You should not have to go beyond day 12 because at this point the double each day option is noticeably bigger.) 3.\*\*Change problem to $10 per day. Make a graph of the information gathered (whole class, individual—preset axis intervals, individual—discuss axis intervals)
* Further considerations: 1. This was designed as a small group activity, but could be done in a whole class group if appropriate. 2. Writing response—answer the problem, describe patterns, or extend—would you choose the same option if you were only given allowance for a week and then you start over again? When does the option to double each day make sense? How are the graphs for each option different (linear, exponential)? Could you write an equation to find the amount of money for any day in the month?